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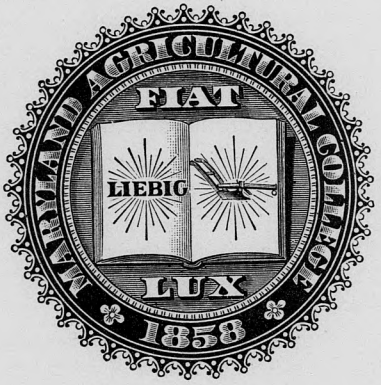

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ADDRESS

Chemical Department, Maryland Agricultural College,

COLLEGE PARK, MD.

ANALYSIS OF FEED STUFFS SOLD IN MARYLAND

BY THE CHEMICAL DEPARTMENT OF THE

MARYLAND AGRICULTURAL COLLEGE.

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The attention of dealers in feed is particularly directed to the Feed-Stuff Law which is printed herewith. The main requirements of the law on the part of the dealers are (1). A license for the sale of concentrated feeding stuff. (2). Affix to each package the guaranteed analysis of protein and fat, net weight of package, name, brand, or trade-mark of feed, name of manufacturer and place of manufacture.

The State Chemist is required to sample and analyze concentrated feed stuff and permitted to sample and analyze other feed stuff.

We invite the cooperation of users of concentrated feed in the enforcement of this law, which is for their interest. Insist on knowing what you buy and who the manufacturer is who is responsible. Insist on the guaranteed analysis.

Concentrated feed stuffs are generally by-products from the manufacture of oil, starch, glucose, alcohol, beer, etc. They are rich in protein, in which the ordinary foods of the farm are deficient. Hence they are used to mix with the ordinary foods in order to "balance" the ration, i. e., make it sufficiently rich in protein. The more concentrated the feed the greater the care necessary in its use in order to avoid injuring the animals.

ANALYSIS OF STANDARD CONCENTRATED STOCK FOODS.

Concentrated feeding stuffs are generally by-products and the analysis will vary some, depending on the method of preparation, etc.

The following should be the minimum analysis of the standard foods named:

		PROTEIN.	FAT.	
Protein Food.	Cotton Seed Meal.....	43 per cent.	8 to 9 per cent.	
	Linseed or Flax Seed Meal.....	36 "	7 "	
		38 "	2 "	(new process)
	Gluten Meal.....	33 to 36 "	2 "	
	Gluten Feed.....	25 "	3 "	
	Germ Oil Meal.....	23 "	10 "	
	Malt Sprouts.....	23 "	1 to 2 "	
	Dried Brewer's Grains	20 "	3 "	
	Wheat Middlings.....	17 to 18 "	5 "	
	Wheat Bran.....	15 "	4 to 5 "	
Starch Foods.	Ground Oats.....	12 "	6 "	
	Corn Meal.....	9 "	3 to 4 "	
Poultry Food.	Meat and Bone Meal...	40 "	10 "	

Cotton Seed Meal. When cotton is picked the seed adheres to the lint, or cotton proper, from which it is separated by ginning. The seed is then crushed and subjected to pressure for the purpose of extracting the oil, in which the seed is very rich. Considerable oil remains, however, after the pressing. The residue from the press is in the form of cakes, which are ground, forming the cotton seed meal.

Linseed Meal, Oil Meal. Flax seed is grown principally for the oil that it contains, which is indispensable for making paints. In this case there is no lint to remove, otherwise the oil is extracted as it is from cotton seed, and the residue of "cake" is ground and forms the meal. A chemical (benzine) process is also used in extracting the oil. This is called the "new process." This process removes more of the oil and consequently leaves less for the meal. As there is less oil in this case the percentage of protein is a little higher.

Gluten Meal and Gluten Feed are by-products from corn in the manufacture of glucose, starch, etc., for which the protein part of the grain is not used.

Germ Oil Meal is the germ of corn from which a large part of the oil has been removed. The residue is ground, forming the meal.

Malt Sprouts. In malting barley the grain is allowed to sprout; it is then dried, the sprouts broken off and removed by sifting. They are not much relished by cattle.

Dried Brewer's Grains. In the brewing of beer the starch of the grain is mostly converted into sugar by malt and removed by water; only the soluble portion being used in the process. The insoluble part, rich in protein, carries a great deal of water. It is frequently fed in the wet condition near the breweries, but if it is to be kept for any length of time, or shipped, it is dried, forming the *dried* brewer's grains.

The other feeds above mentioned scarcely need explanation.

MIXING RATIONS.

The following desirable mixtures for milk production are taken from the Hatch (Mass.) Experiment Station Bulletin No. 71.

1

100 lbs cottonseed, linseed or gluten meal.
125 lbs. flour middlings.
100 lbs. wheat bran or mixed feed.
Mix and feed six to seven quarts daily.

2

250 lbs gluten feed.
100 lbs. wheat bran or mixed feed.
Mix and feed eight quarts daily.

3

5 to 6 quarts gluten feed daily scattered on the ensilage.

4

100 lbs. fine middlings.
100 lbs. brewer's grains or malt sprouts.
Mix and feed 6 to 8 quarts daily.

5

100 lbs cottonseed or gluten meal.
150 lbs. corn or hominy meal.
100 lbs. wheat bran or mixed feed.
Mix and feed 6 to 7 quarts daily.

*6

100 lbs. gluten feed.
100 lbs. wheat bran or mixed feed.
Mix and feed 4 to 6 quarts daily.

*7

100 lbs. gluten feed.
100 lbs. hominy feed.
Mix and feed 4 quarts daily.

The following "practical dairy rations" are from Woll's "Handbook for Farmers and Dairymen" and are intended for 1000 lbs. live weight of animal.

1. (New Jersey), 24 lbs. corn silage, 8 lbs. corn meal, 2 lbs. wheat bran, 4 lbs. oats, 2 lbs. oil meal.

2. (New York), 20 lbs. hay, 2 lbs. wheat bran, 2 lbs. cottonseed meal, 2 lbs. hominy meal.

3. (New York), 42 lbs. corn silage, 2½ lbs. clover hay, 2½ lbs. timothy hay, 8 lbs. corn and cob meal, 14 lbs. dried brewer's grains.

4. (North Carolina), 30 lbs. corn silage, 8 lbs. fodder corn, 3 lbs. corn meal, 1 lb. cottonseed meal.

5. (Pennsylvania), 24 lbs. corn fodder, 5.1 lb. wheat bran, 5.1 lbs. corn meal, 3 lbs. cottonseed meal, 2 lbs. oil meal.

6. (Pennsylvania), 10 lbs. corn fodder, 6 lbs. hay, 3½ lbs. wheat bran, 1½ lbs. cottonseed meal, 1½ lbs. oil meal, 2½ lbs. corn meal.

7. (Vermont), 30 lbs. corn silage, 10 lbs. hay, 4.2 lbs. corn meal, 4.2 lbs. wheat bran, .8 lb. linseed meal.

8. (Wisconsin), 26 lbs. corn silage, 10 lbs. clover hay, 5 lbs. timothy hay, 8 lbs. wheat middlings, 1½ lbs. oil meal.

The results in the following table have been obtained in this laboratory by Mr. J. B. Robb.

We have not included in these analyses any "condition powders," etc. The "International Stock Food," however, is on this order, as it is sold more as a medicine than as a food. It is extensively advertised by circulars with bright, many-colored lithographs and sold for $14.00 per hundred weight—$280.00 per ton. From the analysis it will be seen that, as a food proper, it is inferior to wheat bran.

It contains common salt, pepper, a little charcoal and some aromatic and bitter substances.

We doubt very much the wisdom of the habitual administration of medicine to animals. To be sure a little salt is necessary, but this is cheap and readily added to the food by the feeder.

We would especially call attention to the article on "Condimental Foods" in this number.

*For summer feeding to help pasture.

No.	Name of Manufacturer or Agent.	Name of Food Stuff.	Place of Sampling.
6942	The Akron Cereal Co., Akron, O.	Boss Corn and Oat Feed	Baltimore.....
6831	" " " "	No. 1 Corn and Oat Chop.	Baltimore.....
6842	" " " "	Royal Oat Feed.....	Baltimore.....
6922	The American Cereal Co., Chicago, Ill.	American Poultry Feed	Baltimore.....
6919	" " " "	Buckeye Wheat Food..	.....
6850	" " " "	Quaker Dairy Feed....	Baltimore.....
6959	" " " "	Quaker Dairy Feed....	Perrymans.....
6870	" " " "	Schumacher's Stock Food.	Glyndon.....
6843	" " " "	Victor Corn and Oats Food.	Baltimore.....
6918	" " " "	Vim Oat Feed.	.....
6924	The American Cotton Oil Co., New York.	Prime Cotton Seed Meal	Union Mills.....
6845	The Anglo-American Mfg. Co., Boston, Mass.	Anglo-American Food for Stock.	Baltimore.....
6912	Jas. Baily & Co., Baltimore, Md.	Linseed Meal.....	Ingleside.....
6953	Baltimore Pearl Hominy Mills, Baltimore, Md.	Hominy Chop.....	College Park.....
6961	W. G. Bishop & Co., Baltimore, Md.	Cotton Seed Meal.....	Baltimore.....
6830	" " " "	Gluten Meal.....	Baltimore.....
6931	E. W. Blatchford & Co., Chicago, Ill.	Calf Meal, Perf. Milk Substitute.....	College Park.....
6937	R. B. Brown Oil Co., St Louis, Mo.	Linseed Meal.....	Linwood.....
6876	Capitol Food Co., Tiffin, O.	Capitol Poultry Food..	Hagerstown.....
6960	Dairy Food Co., Cockeysville, Md.	Rye Distillery Grains..	Elkridge.....
6945	Decatur Cotton Oil Co., Decatur, Ill.	Cotton Seed Meal.....	Baltimore.....
6839	S. J. Diggs, Baltimore, Md.	Flax Seed Meal.....	Baltimore.....
6838	Edgecombe County Oil Co., Tarboro, N. C.	Cotton Seed Meal.....	Baltimore.....
6950	" " " "	Cotton Seed Meal.....	Tuscarora.....
6951	" " " "	Cotton Seed Meal.....	Tuscarora.....
6927		Pea Meal.....	College Park.....
6946	C. A. Gambrill Co., Baltimore, Md.	Extra Middlings.....	Baltimore.....

No.	Protein (Nx6.25).		Fat or Ether Extract.		Moisture.
	Found.	Guaranteed.	**Found.**	Guaranteed.	
6942	8.81	7.94	3.23	4.18	7.73
6831	9.43	7.94	5.37	4.18	7.81
6842	7.26	9.25	3.28	4.14	7.82
6922	12.62	.....	6.04	.....	9.30
6919	17.12	.....	4.14	.....	10.06
6850	15.19	12.03	3.51	2.50	7.26
6959	13.37	12.03	3.62	2.50	6.27
6870	10.62	10.70	4 20	3.33	6.37
6843	8.94	8.29	3.84	3.00	8.64
6918	6.37	....	2.29	.....	6.67
6924	49.62	43.00	9.03	9.00	7.22
6845	14.62	.....	4.72	.....	9.21
6912	15.75	....	25.92	.....	6.95
6953	10.50	....	7.43	.....	11.70
6961	42.62	41.00	10.24	9.00	7.99
6830	23.25	.....	2.04	.....	8.66
6931	35.25	32.00	5.24	5.00	7.16
6937	36.27	.....	7.80	.....	5.99
6876	18.94	.....	8.74	.....	8.67
6960	18.00	18.20	10.02	14.55	6.72
6945	46.06	.....	9.36	.....	6.66
6839	30.75	.....	7.66	.....	8 95
6838	49.54	.....	10.87	.....	5.95
6950	39.87	.....	19.55	.....	4.92
6951	46.06	.....	10.15	.....	5.67
6927	19.87	.....	1.64	.....	9.29
6946	16.50	.....	4.06	.....	8.03

No.	Name of Manufacturer or Agent.	Name of Food Stuff.	Place of Sampling.
6860	C. A. Gambrill Co., Baltimore, Md.	Hominy Chop	Hyde
6859	" " "	Mlll Feed	Knoeble
6886	Gilbert Brothers & Co., Baltimore, Md.	Flax Seed Meal	Cambridge
6954	Glucose Sugar Refining Co., Chicago, Ill.	Chicago Gluten Meal	College Park
6901	" " " "	Diamond Gluten Feed	Baltimore
6928	" " " "	Germ Oil Meal	College Park
6929	" " " "	Gluten Meal	College Park
6932	" " " "	Chicago Gluten Meal	Gittings
6958	" " " "	Gluten Feed	Ellicott City
6914	Grove Linseed Oil Co., Philadelphia, Pa.	Linseed Meal	Massey
6849	The H-O Co., Buffalo, N. Y.	Dairy Feed	Baltimore
6836	" " " "	Horse Feed	Baltimore
6940	" " " "	Horse Feed	Baltimore
6956	" " " "	Horse Feed	Elkridge
6848	" " " "	Poultry Feed	Baltimore
6948	" " " "	Scratching Feed	Carroll Station
6952	The Hudnut Co., Terre Haute, Ill.	Hominy Feed	College Park
6871	International Food Co., Minneapolis, Minn.	Poultry Food	Keedysville
6867	" " " "	Stock Food	Alesia
6943	Lull Franke Grain Co., Milwaukee. Wis.	Standard Mixed Feed.	Baltimore
6880	Mackling Bros.' Mfg. Co., Philadelphia. Pa.	Royal Poultry Food	Aberdeen
6853	The Magic Food Co., Chattanooga, Tenn.	Magic Egg Producer and Poultry Food	Ladiesburg
6926	The Maryland Grange Agency, Balto., Md.	Linseed Meal	College Park
6925	" " " "	Pure Old Process Oil Meal.	College Park
6847	The Chas. Pope Glucose Co., Chicago, Ill.	Cream Gluten Meal	Baltimore.
6939	" " " "	Flax Seed Meal	Baltimore
6882	" " " "	Gluten Meal	Hyattsville

No.	Protein (Nx6.25).		Fat or Ether Extract.		Moisture.
	Found.	Guaranteed.	**Found.**	Guaranteed.	
6860	10.94	.....	6.72	.....	10.36
6859	14.37	.....	5.48	.....	8.65
6886	17.43	.....	22.60	.....	6.77
6954	38.75	38.50	3.83	3.87	8.05
6901	23.56	26.20	1.39	2.70	8.83
6928	24.18	25.50	8.10	10.50	9.15
6929	40.02	39.50	2.58	3.37	8.16
6932	26.69	28.33	1.57	.....	6.55
6958	20.00	.....	1.22	.....	9.46
6914	32.43	.....	5.71	.....	8.17
6849	19.69	18.00	2.89	4.50	7.72
6836	12.31	12.00	3.50	4.50	8.40
6940	11.81	12.00	3.71	4.50	9.04
6956	12.75	12.00	4.08	4.50	8.00
6848	16.94	17.00	4.84	6.50	8.90
6948	11.62	.....	3.30	.....	9.63
6952	10.31	12.85	9.06	8.52	9.25
6871	14.81	.....	3.24	.....	7.56
6867	13.00	.....	4.19	.....	9.35
6943	18.06	.....	4.14	.....	8.84
6880	1.50	.....	1.10	.....	1.55
6853	10.00	.....	3.84	.....	9.28
6926	34.12	.....	10.74	.....	7.04
6925	34.56	.....	6.75	.....	8.51
6847	34.44	34.12	1.13	3.20	8.30
6939	37.06	.....	3.79	.....	9.63
6882	32.56	.....	1.01	.....	8.74

No.	Name of Manufacturer or Agent.	Name of Food Stuff.	Place of Sampling.
6837	H. L. Pope & Co., Dayton, Ohio.	Oil Meal	Baltimore
6835	Pratt Food Co., Philadelphia, Pa.	Food for Horses, Cattle, Sheep and Swine	Baltimore
6851	" " " "	Poultry Food	Ladiesburg
6844	Pure Animal Food Works, Waukegan, Ill.	Fine as Silk Horse Food	Baltimore
6861	Henry Reckford M'f'g. Co., Bel Air, Md.	Pig Feed Middlings	Bel Air
6866	" " " "	Quaker Dairy Food	Bel Air
6862	" " " "	Ship Stuff	Bel Air
6865	" " " "	Victor Corn & Oats Food	Bel Air
6957		Mill Sweepings	
6944	Daniel Rider, Baltimore, Md.	Oil Cake—Old Process.	Baltimore
6891	Rochester Horse & Cattle Food Co., Rochester, N.Y.	Horse & Cattle Food	Greenboro
6846	Royal Food Co., Baltimore, Md.	Royal Egg Food	Baltimore
6938	A. D. Ryder, Upton, Pa.	Bran From Burr Mills.	
6941	A. F. Saulson, Baltimore, Md.	White Hog Middling	Baltimore
6832	C. B. Watkins, Baltimore, Md.	Cotton Seed Meal	Baltimore
6833	" " " "	Oil Meal	Baltimore
6869	Westminster Food Co., Westminster, Md.	A1 Food for Horses, Milk Cows, Beef Cattle & Hogs.	Glyndon
6858	The Wilbur Seed Meal Co., Milwaukee, Wis.	Horse & Cattle Food	Baltimore
6947	Chas. Willms, Jr. & Co., Baltimore, Md.	"C. G." High Grade Corn and Oats Food.	Baltimore

No.	Protein (Nx6. 25).		Fat or Ether Extract.		Moisture.
	Found.	Guaranteed.	**Found.**	Guaranteed.	
6837	35.56		5.84		8.34
6835	14.93		7.84		9.23
6851	13.75		7.39		9.20
6844	19.95		4.81		7.14
6861	14.31		4.82		9.72
6866	13.50		2.93		9.79
6862	15.50		4.77		10.58
6865	8.50		3.20		9.42
6957	11.68		1.87		10.55
6944	33.19		3.65		8.73
6891	16.18		3.20		9.57
6846	12.31		1.37		5.10
6938	18.43		2.21		7 21
6941	17.00		2.90		8 30
6832	44.37		11.54		7.48
6833	30.93		6.40		8.71
6869	34.06		5.69		8.09
6858	21.75		4.72		7.38
6947	6.62		2.24		10.08

TABLE II.

Analysis from the Maryland Experiment Station, Supplied by Director H. J. Patterson.

Experiment Station Sample No.	Description of Sample.	Water.	Ash.	Protein.	Crude Fibre.	Nitrogen Free Extract.	Fat.
2125	C. O. Feed, sampled by S. S. Smith, Long Green, Md.	6.26	4.65	9.18	15.39	58.60	5.92
2133	Ground Corn and Corn Fodder, sampled by F. M. Galt, Sterling, Illinois	7.66	3.03	8.05	17.87	51.63	4.32
2228	Winter Wheat Bran, 11½ lbs. per bu.; selling price $17.50	7.38	6.80	14.52	10.06	51.64	9.60
2229	Winter Wheat Bran, 14½ lbs. per bu.; selling price $16.50 per ton	7.47	6.65	13.21	11.82	54.30	6.55
2230	Gambrill's City Middlings, No. 3. Price $16.00; sampled by W. L. Amoss	7.75	1.70	14.87	6.20	60.96	6.20
2231	No. 4 Standard Spring Wheat Middlings. Price $16.00	6.89	5.31	16.01	10.95	54.04	6.80
2232	No. 5 Coarse Spring Wheat Bran. Price $16.50	7.19	6.62	15.40	10.65	52.54	7.60
2233	Sample Sold for Gluten Meal; resembled refuse from peanut mills. Sampled by Thomas J. Lea, Lutherville, Md.	1.86	1.97	14.87	7.41	21.71	52.18
2379	Dairy Food. Dairy Food Co., Cockeysville, Md.	7.35	2.39	18.20	14.52	42.99	14.55
2457	Old Process Flaxseed Meal, Bishop & Co.	6.82	5.74	26.60	9.86	43.88	7.10
2458	Gluten Feed. Sampled by Bishop & Company	6.32	2.05	19.60	9.90	58.03	4.10
2459	King Oat Feed. Sampled by Bishop & Company	5.52	7.62	12.20	18.95	49.29	6.42
2514	Hay Mixed With Timothy Coming into Baltimore Market from Wisconsin. Sampled by Chamber of Commerce	7.58	5.53	8.57	32.20	41.45	4.67

ANALYSIS OF "BLACK DEATH."

This mixture has been extensively advertised in the State as an insecticide and fertilizer. It is a mixture of Paris green, hard coal and plaster (or gypsum). Specks of the Paris green were detected by the use of the microscope. Analysis gave 0.76 per cent. of the element arsenic, with copper and acetic acid, the ingredients of Paris green. The formula for 100 lbs. of the mixture is approximately as follows:

Paris green 1¾ lbs.
Hard coal 30 lbs.
Land plaster, moisture, etc., .68¼ lbs.

The coal is probably used to mask the other ingredients, as it is certainly not the best material to mix with Paris green.

We would suggest the use of a mixture of Paris green and plaster of known strength. It will be found to be much cheaper.

ANALYSIS OF "STONEBRAKER'S EXTERMINATOR, SUBTERRANEOUS INSECT AND PREVENTIVE OF FROST KILLING FRUIT."

(Put up at Richmond, Va.)

This material is sold in bags at $12 per ton. Analysis shows that it is composed of common salt, gas house lime, and an iron compound, apparently waste "iron sponge," a material used at the gas factory to purify gas. The approximate formula is as follows:

Common salt,.....	41
Iron compound	39
Gas lime	20
	100

STONEBRAKER'S "WASH" FOR FRUIT TREES.

This material is sold in candy buckets at 12½ cents per gallon. It is a mixture of gas house lime, with the liquid from the "scubbers" of the gas-house, which is the water after it has been used to wash the gas in order to purify it in the oil-gas process of making illuminating gas. It may contain, also, some alkaline waste liquid from a soap factory.

THE UTILITY OF CONDIMENTAL FOODS AND CONDITION POWDERS.

(From Hatch (Mass.) Exp. Sta., Bulletin No. 71).
By Dr. James B. Paige.

A study of the action of patent foods, condition powders and tonic foods can best be made by a study of the action which the essential constituents of such foods have upon the various tissues of the

body when ingested. While none of the foods are identical in composition, all contain one or more substances to which their specific action is due. Ordinarily the active ingredient is mixed with various grains and by-products in order to increase the bulk of the mixture, and in certain instances to disguise its disagreeable taste or odor.

CONDIMENTS AND TONICS, WHAT THEY ARE, AND HOW THEY ACT.

As a rule the specific substance found in such foods belongs to one of the following classes of drugs: *condiments*, *tonics* or *alteratives*.

Condiments are defined as pungent appetizing substances used for flavoring foods; they excite the appetite and promote digestion.

Tonics are substances which increase the strength or tone of the animal system, obviating the effects of debility and restoring healthy functions. They are classified according to the particular organ or tissue they act upon, as blood, vascular, gastric, intestinal and nerve tonics.

Blood tonics improve the quality of the blood; vascular tonics increase the flow of blood to a part, improving cell activity and nutrition; nerve tonics strengthen and restore tone to the weakened nerve tissue; gastric and intestinal tonics increase the appetite and aid digestion.

The action of these various tonics is quite complex. Some act directly upon a tissue to increase its functional activity, while others produce the same effect by an indirect action through the circulation, or by an action upon the nerves which regulate the functional activity of a particular organ, or a part of it. To illustrate: The secretion of gastric juice may be increased by the direct action of alkali upon the mucous membrane of the stomach, or the same result may be obtained by the administration of a drug which will increase the flow of blood to the mucous membrane of that organ.

Alteratives are substances which improve the general nutrition of the body without exerting a special action on any particular organ.

Their action is more general than that of tonics; they are of value in combating disease of a constitutional nature, accompanied by general mal-nutrition, due to impaired tissue activity or to retention of waste products in the body.

Some of the more common drugs that are beneficial as condiments, tonics, and alteratives are: iron sulphate, arsenic, potassium iobide, sulphur, gentian, ginger, caraway, anise, cardamon, fennel, fenugreek and pepper.

Having briefly considered the general action of condiments, tonics, and alteratives, one naturally asks.

First. Are such substances beneficial to animals in a healthy condition, either for improving their condition, or for stimulating the production of meat, milk and eggs?

Second. Are tonic foods or condition powders of value for sick animals?

Third. What effect follows their long continued use?

EFFECTS OF CONDIMENTS AND TONICS ON HEALTHY ANIMALS.

Contrary to the popular belief, animals, in a state of health, under favorable conditions as regards food and stabling, *do not need condition powders or tonic foods.* There is in the body of such an animal a condition of equilibrium of all body functions. The processes of nutrition, digestion and assimulation are at their best. All that is required to maintain this condition of balance is that the animal be kept under sanitary conditions and receive a sufficient quantity of healthful, nutritious food, and pure water. It may be possible by the use of such substances to improve the appetite so that an animal will ingest and possibly digest more food, but should the increased quantity of nutrient constituents elaborated, not be appropriated by the tissues of the body, *harm may result from the overloading of the lymphatic system, or from an increased activity of the excretory organs.*

Stimulating foods may have a greater influence upon egg production than upon meat or milk production.

It is unquestionably possible to stimulate and excite the reproductive system by the use of drugs. As a result of this stimulation the organs become more vascular and active, in consequence of which there may be a development that will lead to an earlier egg production. Admitting that it is thus possible to promote earlier laying, has it yet been demonstrated that the total product of a fowl can be increased by such methods?

Brooks' three experiments on the use of condition powder with poultry bear upon this point. He states: "A study of the figures show that the hens not getting the condition powder laid more eggs, of practically the same average weight. The food required to produce a single egg was less, and the cost was very materially less. *In the light of these results, it is believed that poultry keepers throw away money expended for condition powder.*" (Eleventh report Hatch Experiment Station, page 90).

EFFECTS OF CONDIMENTS AND TONICS ON DISEASED ANIMALS.

In the case of sick animals there are abnormal conditions to be taken into consideration, such as loss of appetite, weakened digestion, poor circulation, and mal-nutrition. Until every organ performs its normal function a state of health does not, cannot exist. If by the administration of a tonic, stimulant or an alterative, it is possible to restore to a normal condition any organ so that it can perform its function, then every organ in the body is benefited.

Foods act similarly to drugs in this respect. Take for example a horse that has been fed for six months upon hay and grain and allow him green food for a time, or feed in the place of the accustomed ration of oats a more stimulating grain, and as a result ridges of horn soon appear upon the hoofs (due to the increased nutrition of the horn secreting band of the foot).

THE RESULTS OF LONG-CONTINUED USE.

The results of long continued use of condiments and tonics depend somewhat upon the amount administered and the condition of the animal to which they are given. A stimulant or tonic action upon an organ is followed by a reaction characterized by weakness and depression of the function of that particular part. For illustration, the use of moderate quantities of a gastric stimulant improves the appetite and assists digestion, but when the quantity is increased above a certain amount, or the use of the drug continued beyond a certain time, the effect is to produce a congestion and inflammation of the stomach, a condition which is unfavorable for the digestion of food.

Yeo* remarks concerning condimental feeds, "Many of these, by conferring agreeable flavors and by their warm carminative properties promote appetite and assist digestion; but their excessive use is calculated to excite irritation and disorder of the digestive organs."

WHEN TO USE CONDIMENTAL FOODS.

In the great majority of cases where tonic foods or condition powders appear to be necessary, *they can be dispensed with and usually to the advantage of the animal.* Any real or apparently diseased condition that can be cured by the administration of an indiscriminate mixture of drugs *can ordinarily be relieved with less danger to the patient by the adoption of a rational system of treatment and feeding.*

In those instances where drugs are necessary, it is far better *to employ one or more, adapted to the treatment of the particular ailment,* than to attempt a cure by the administration of a "shot-gun" mixture, in the form of a patent food or condition powder.

In the end such specific treatment is infinitely less expensive, less dangerous and more satisfactory.

*Food in Health and Disease.

FEED STUFF LAW OF MARYLAND. (Approved, April 5, 1900.)

Section 1. Be it enacted by the General Assembly of Maryland, That the following new Sections be added to Article 48 of the Code of Public General Laws, title "Inspections," under the new sub-title, "Feed Stuffs," to follow Section 83, and to be known as Sections 84, 85, 86, 87, 88, 89, 90, 91 and 92, and to read as follows:

84. Every manufacturer, company or person who shall sell, offer or expose for sale or for distribution in this State any concentrated commercial feeding stuff as defined in the following section of this sub-title, used for feeding farm live stock and poultry, shall affix to every package of such feeding stuff, in a conspicuous place, on the outside thereof, a plainly printed statement, clearly and truly certifying the number of net pounds in the package sold or offered for sale, the name or trade-mark under which the article is sold, the name of the manufacturer or shipper, the place of manufacture, the place of business, the source of the food principles, and a chemical analysis stating the percentage of crude protein, allowing one per cent. of nitrogen to equal six and one-fourth of protein, and of crude fat it contains, both constituents to be determined by the method adopted, at the time, by the Association of Official Agricultural Chemists.

85. The term concentrated commercial feeding stuff, as here used, shall not include hays and straws, the whole seeds nor the unmixed meals made directly from the entire grains of wheat, rye, barley, oats, Indian corn, buckwheat and broom corn. Neither shall it include wheat, rye and buckwheat brans or middlings, not mixed with other substance, but sold separately, as distinct articles of commerce, nor pure grain ground together. The agent of the State hereinafter authorized to make those inspections, is fully empowered to take samples of these excepted articles when found, and, if upon analysis, they prove to be adulterated, the vender shall be in all respects subject to the penalties hereinafter set forth for the adulteration of concentrated commercial feeding stuff.

86. The term concentrated commercial feeding stuff, as here used, shall include linseed meals, cotton-seed meals, cotton-seed hulls, pea meals, cocoanut meals, gluten feeds, maize feeds, starch feeds, sugar feeds, dried brewer's grains, malt sprouts, hominy feeds, cereline feeds, rice meals, oat feeds, corn and oat chops, ground beef, fish or animal meals, mixed feeds, all patented or trade-marked foods and all other materials of similar nature not included within the preceding Section of this sub-title.

87. Before any manufacturer, company or person shall sell, offer or expose for sale in this State any concentrated commercial feeding stuff, as defined in the preceding Section of this sub-title, he or they shall for each and every feeding stuff bearing a distinguishing name or trade-mark, file with the State Chemist of the Maryland Agricultural College, a certified copy of the statement named in Section 84 of this sub-title; said certified copy to be accompanied, when the State Chemist shall so request, by a sealed package containing at least one pound of the feeding stuff to be sold or offered for sale, and the company or person furnishing said sample shall thereupon make affidavit that said samples correspond within reasonable limits to the feeding

stuff which it represents in the percentage of protein and fat which it contains.

88. Before any concentrated commercial feeding stuff, as defined in Section eighty-six of this Act is sold, offered or exposed for sale in this State, the manufacturer, importer, agent or seller thereof shall pay to the Treasurer of the Maryland Agricultural College an inspection fee of twenty dollars for each brand or kind of concentrated commercial feeding stuff contemplated to be sold, and shall receive therefor from said treasurer a license to sell such brand of concentrated commercial feeding stuff until the first day of July next following; provided that when any manufacturer, importer or dealer shall have paid the inspection fee as herein provided, it shall not be necessary for any other person, as his agent or representative, to pay said fee.

89. Any manufacturer, importer or person who shall sell, offer or expose for sale or for distribution in this State any concentrated commercial feeding stuff, as defined in Section 86 of this Act, without complying with the requirements of the preceding sections of this sub-title, or any feeding stuff which contains substantially a smaller percentage of constituents than are certified to be contained shall, on conviction in a court of competent jurisdiction, be fined not more than one hundred dollars for the first offense, and not more than two hundred dollars for each subsequent offense.

90. The State Chemist of the Maryland Agricultural College shall annually analyze, or cause to be analyzed, at least one sample (to be taken in the manner hereinafter prescribed) of every concentrated feeding stuff sold or offered for sale under the provisions of this sub-title; said State Chemist is hereby authorized and directed in person, or by deputy, to take a sample, not exceeding two pounds in weight, for said analysis, from any lot or package of concentrated commercial feeding stuff, which may be in the possesion of any manufacturer, importer, agent or dealer, or in *transitu* in this State. The result of the analysis of the sample or samples so procured, together with such additional information as circumstances advise, shall be published in reports or bulletins from time to time.

91. Any person who shall obstruct the State Chemist or his deputy, when in the discharge of his duty, shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be punished by a fine of not less than one hundred ($100) dollars, or more than five hundred ($500) dollars, or by imprisonment for not less than one month or more than six months, or by both such fine and imprisonment.

92. Whenever the State Chemist becomes cognizant of the violation of any of the provisions of this sub-title he shall report such violation to the State's Attorney having jurisdiction, who shall prosecute the party or parties thus reported, but it shall be the duty of said State Chemist to notify the manufacturer, importer or dealer in writing, before reporting same to State's Attorney, and give him not less than thirty days thereafter in which to comply with the requirements of this sub-title, but there shall be no prosecution in relation to the quality of any concentrated commercial feeding stuff if the same shall be found substantially equivalent to the certified statement named in Section 87 of this sub-title.

CONTENTS.

	Page.
Standard Feed Stuffs—Composition	2- 3
Dairy Rations	4- 5
Analysis of Feed Stuff Sold in Maryland	6-11
Analysis of Feed Stuff from the Experiment Station	12
"Black Death"—Analysis of	13
"Exterminator"—Analysis of	13
"Wash" for Fruit Trees	13
The Utility of Condimental Foods and Condition Powders	13-16
The Feed Stuff Law of Maryland	17

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